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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/775,781      | 02/10/2004  | Arjang Hassibi       | 5852P005            | 9350             |

8791 7590 12/28/2005

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EXAMINER

FICK, ANTHONY D

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1753

DATE MAILED: 12/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/775,781 | <b>Applicant(s)</b><br>HASSIBI, ARJANG |  |
|                              | <b>Examiner</b><br>Anthony Fick      | <b>Art Unit</b><br>1753                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 6 is objected to because of the following informalities: line 2 states "an active electrode an a passive electrode". It is assumed "and" is misspelled as "an" and the claim should read "an active electrode and a passive electrode". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1 through 5 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Glass et al. (U.S. 5,296,125).

Glass discloses an electrochemical sensor/detector system. The sensor contains an array of electrodes that receive a sample material to be tested, and a plurality of sensor cells to analyze the material (column 4, paragraph 13 and figure 5). Thus claim 1 is met. Glass further discloses circuitry to control each of the electrodes, allowing a user to activate any combination of electrodes and sensor cells (column 5, top paragraph), and a decoder coupled to the electrodes to select the desired electrode

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array (column 7, top paragraph). This meets the requirements of claim 2. Glass also discloses the system is equipped to do cyclic voltammetry through the control circuitry (column 5, paragraph 2). Therefore the system will inherently have a function generator to carry out the cyclic voltammetry. Reference elements are also connected to the circuitry as a reference electrode, thus meeting claim 3 (column 6, paragraph 6).

Glass discloses the electrode array consists of working electrodes (column 6, paragraph 7) and counter and reference electrodes (column 8, paragraph 4). The triple electrode arrangement of claim 5 requires a common electrode, an active electrode, and a passive electrode. These electrodes are functionally the same as the electrodes of Glass but are named differently. Thus the working electrode of Glass reads on the active electrode, the reference electrode reads on the passive electrode, and the counter electrode reads on the common electrode. Therefore the system of Glass meets claim 5. Glass further discloses the sensor detects chemicals in solution (column 3, paragraph 9) as in claim 12.

4. Claims 1 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Wolf et al. (U.S. 6,376,233).

Wolf discloses a semiconductor array of sensors (column 2, paragraph 3) along with an array of electrodes to receive sample material (figures 5 and 6) as in claim 1. Wolf further discloses testing cell specimens or biological samples as in claim 13 (abstract).

***Claim Rejections - 35 USC § 103***

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5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glass as applied to claims 1 through 5 and 12 above, and further in view of Bech et al. (U.S. 6,932,893).

The disclosure of Glass is as stated above for claims 1 through 5 and 12.

The difference between Glass and claims 6, 7 and 10 is the requirement of an amplifier for each of the sensor cells.

Bech teaches a system for electrophysiological measurements. The system measures the ion transport properties of membranes utilizing an array of electrodes. Bech teaches the electrical system contains an array of addressable sensors, each with working electrodes and reference electrodes, and a plurality of amplifiers (column 28 paragraphs 4, 5, 6 and 8 and figure 15).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include an amplifier for each sensor cell as in Bech within the device of Glass because multiple amplifiers allow for testing and measurements on a plurality of sensors to be done in parallel (Bech abstract). Because both Bech and Glass are concerned with electrically measuring properties from an array of electrodes, one would have a reasonable expectation of success from the combination. Glass also discloses in figure 3, a plurality of switches and controls required to route the

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appropriate signals through the device. Further, Glass discloses the amplifier can be modified to allow several selectable gains for greater sensitivity (column 7, paragraph 1). Thus the combination of the plurality of amplifiers of Bech with the variable gain, plurality of switches and control devices of Glass meet the requirements of claim 6. The software selectable gains disclosed by Glass would be in the form of bits inputted into the amplifier to set a gain level as in claim 7. Glass also discloses the sensors are equipped to do cyclic voltammetry (column 5, paragraph 2) as in claim 10.

7. Claims 8, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glass in view of Bech as applied to claims 1 through 7, 10 and 12 above, and further in view of Li et al. (U.S. 6,824,669).

The disclosure of Glass in view of Bech is as stated above for claims 1 through 7, 10 and 12.

The difference between Glass in view of Bech and claims 8, 9 and 11 is the type of analysis required by the claims.

Li teaches protein sensors using electrical detection methods. The sensor comprises a plurality of wells with a microelectrode, a counter electrode and a reference electrode in each well (column 3, paragraph 2). Li further teaches this sensor configuration can detect interactions using a variety of electrical detection methods; impedance spectroscopy, cyclic voltammetry, potentiometric measurements, and transient measurement methods (column 7, paragraph 3). These transient measurement methods read on the charge perturbation signature analysis of claim 8.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the different electrical detection methods of Li within the device of Glass in view of Bech because the different methods are all capable of detecting molecular interactions with the sensor (Li column 7, paragraph 3) and using multiple methods allows for confirmation of results and greater flexibility in the sensor. Because both Li and Glass in view of Bech are concerned with electrical detection methods with an array of electrodes, one would have a reasonable expectation of success from the combination. Thus the combination meets claims 8, 9, and 11 with charge perturbation signature analysis read as a transient measurement method.

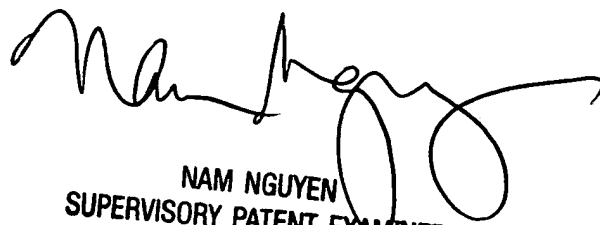
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Fick whose telephone number is (571) 272-6393. The examiner can normally be reached on Monday thru Friday 8 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Anthony Fick *AF*  
AU 1753  
December 23, 2005



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